

THAT WHICH IS CLAIMED:

1. A system for redirecting the display of information from a computer program to a remote display terminal comprising:
 - a display management module stored on a computer-readable medium in communication with an output of the computer program and the remote display terminal for displaying data from the computer program on a display terminal;
 - 5 data modules stored on a computer-readable medium containing text data and graphical data representations used by the computer program to display information on a display terminal;
 - 10 an output redirection handler stored on a computer-readable medium in communication with said display management module; and
 - a data communication link connected between said output redirection handler and the remote display terminal,
 - 15 wherein said display management module receives commands to display data from the computer program, and wherein said display management module, based on the commands from the computer program, provides commands and data from said data modules to said output redirection handler for displaying information on the remote display terminal.
- 20 2. A system according to Claim 1 further comprising a remote display handler stored on a computer-readable medium in communication with the data communication link and the remote display terminal.
3. A system according to Claim 2, wherein said display management module provides data and commands based on a predetermined set of commands, and wherein 25 said output redirection handler communicates with said display management module using the predetermined set of commands and provides the commands and data to the remote display handler for display on the remote display terminal.
4. A system according to Claim 2, wherein said data communication link is a data communication link selected from the group consisting of parallel, serial, and network,

and wherein said output redirection handler receives commands and data from said display management module and formats the commands and data for transmission across said data communication link.

5. A system according to Claim 2, wherein said remote display handler receives commands and data from said output redirection handler and controls the remote display terminal to display the data.

6. A system according to Claim 2, wherein said remote display handler stores a current attribute value representing a color attribute of the characters being displayed on the remote display terminal such that subsequent commands to display data on the remote 10 display terminal that do not alter the attribute do not require transmittal of the attribute variable.

7. A system according to Claim 2, wherein said remote display handler stores a value representing the current position of a cursor on the remote display terminal such that subsequent commands to display data on the remote display terminal do not require 15 data concerning cursor position.

8. A system according to Claim 1, wherein at least one data module is a language data module including data strings representing language data, wherein each data string is stored in said data modules and designated by a token, and wherein to display a data string, said display management module receives a token associated with the data string 20 from the computer program and a command to display the data string and based on the token accesses said language data module, retrieves the data string associated with the token, and outputs the data string and a command to display the data string to said output redirection handler.

9. A system according to Claim 1 further comprising:
25 a plurality of language data modules associated with said display management module, wherein each language data module includes data strings representing language data in a selected language; and

a main language module header stored on a computer-readable medium and associated with said display management module comprising individual pointers indicating the location in a computer-readable storage medium in which each language data module is located, wherein to display a data string in a selected language, said 5 display management module receives a token associated with the data string and a command to display the data string, wherein said display management module accesses said main language module header and retrieves the pointer associated with the language data module corresponding to a preselected desired language for displaying the data string, and wherein said display management module using the pointer, accesses the 10 language data module, retrieves the data string associated with the token, and outputs the data string in the desired language and a command to display the data string to said output redirection handler.

10. A system according to Claim 8 further comprising a font module stored on a computer-readable medium containing font data for displaying 256 standard and 15 extended ASCII characters.

11. A system according to Claim 10, wherein at least one data module is a language data module comprising:

a string data area stored on a computer-readable medium that includes data strings representing language data, wherein each character of each data string is a character 20 selected from the group consisting of standard ASCII, extended ASCII, and double byte characters;

an extended ASCII font data area stored on a computer-readable medium for storing font data related to extended ASCII characters that are not displayable using the extended ASCII character font data stored in said font module; and

25 a double byte character font data area stored on a computer-readable medium for storing font data related to at least one double byte character.

12. A system according to Claim 11, wherein characters in a data string that are standard ASCII and extended ASCII characters having ASCII codes less than a selected escape code are stored by their ASCII representations in said string data area, while

extended ASCII characters and standard ASCII characters, if any, having ASCII codes at least as great as the selected escape code and ASCII characters that identify double byte characters are encoded and the encoded values are stored in said string data area.

13. A system according to Claim 11, wherein standard ASCII characters and 5 extended ASCII characters having ASCII codes less than the selected escape code are stored by their ASCII code representations in the string data area, and wherein extended ASCII characters having ASCII codes at least as great as the selected escape code and ASCII characters that identify the start of 16 bit double byte characters are encoded into 16 bit values and the encoded values are stored in the string data area.

10 14. A system according to Claim 13, wherein double byte characters are sequentially encoded and the 16 bit encoded values representing the double byte characters are stored in said string data area, wherein font data associated with the double byte characters is stored in the double byte character font data area, and wherein at least one extended ASCII character is encoded in said string data area with an escape code 15 preceding the ASCII representation of the extended ASCII character, and wherein if the extended ASCII character is not displayable with extended ASCII character font data stored in said font module, data for the extended ASCII character is stored in said extended ASCII font data area.

15. A system according to Claim 14, wherein double byte characters are 20 sequentially encoded such that the first double byte character is represented by a two-byte code having a first byte that is one value greater than the escape code and a second byte equal to zero, and wherein remaining unique double byte characters are encoded with sequential 16 bit code values.

16. A system according to Claim 15, wherein to display a data string, said display 25 management module receives a token associated with the data string and a command to display the data string from the computer program and accesses the location in the string data area where the data string is located and sequentially outputs the characters of the data string along with a command to display the data string to said output redirection handler.

17. A system according to Claim 10, wherein when said display management module receives a command to display an ASCII character, said display management module locates the font data associated with the ASCII character in said font module and using the font data outputs the ASCII character to a local display and a command and the character code to said output redirection handler.

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18. A system according to Claim 1 further comprising a logo module stored in a computer-readable medium and associated with said display management module, wherein said logo module contains graphical data for display of at least one logo, and wherein when said display management module receives a command to display the logo, 10 said display management module locates the graphical data associated with the logo in said logo module and outputs the logo image to a local display and a command and data necessary to display a representation of the logo to the output redirection handler.

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19. A system according to Claim 1 wherein said display management module outputs data for displaying a progress bar and a command to display a representation of the progress bar to said output redirection handler.

20. A system according to Claim 1, wherein said display management module outputs data for displaying a box defining an area on a display terminal and a command to display the box to said output redirection handler.

21. A system according to Claim 20, wherein said display management module 20 outputs data for displaying a box defining an area on a display terminal, wherein said display management module further outputs data to be displayed within the defined area of the box, and wherein said display management module outputs commands to scroll the data displayed within the defined area, while any data displayed on other portions of the remote display terminal remain at the same position.

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22. A method for redirecting the display of information from a computer program to a remote display terminal comprising the steps of:
providing on a computer-readable medium data modules containing text and graphical representation data used by the computer program to display information;

receiving a command to display data from the computer program;
retrieving data associated with the command from the data modules;
providing a command and data from the data modules for display;
redirecting the command and data to be displayed to the remote display terminal;
5 and
displaying the data on the remote display terminal.

23. A method according to Claim 22, wherein said providing a command and data step provides data based on a predetermined set of commands, and wherein said redirecting step, using the predetermined set of commands, redirects the data to the
10 remote display terminal.

24. A method according to Claim 23 further comprising the step of transmitting the command and data from said redirecting step on a data communication link to the remote display terminal.

25. A method according to Claim 24, wherein the data communication link is a
15 data communication link selected from the group consisting of parallel, serial, and network, and wherein said transmitting step further comprises the step of formatting the commands and data from said providing commands and data step for transmission across the data communication link.

26. A method according to Claim 24, wherein said displaying step receives
20 commands and data from said transmitting step and controls the remote display terminal to display the data from the computer program.

27. A method according to Claim 22 further comprising the step of storing a current attribute value representing a color attribute of the characters being displayed on the remote display terminal such that subsequent commands to display data on the remote
25 display terminal from said providing a command and data step that do not alter the attribute do not require output of the attribute variable.

28. A method according to Claim 22 further comprising the step of storing a value representing the current position of a cursor on the remote display terminal such

that subsequent commands to display data on the remote display terminal from said providing a command and data step do not require data concerning cursor position.

29. A method according to Claim 22, wherein said providing data modules step provides at least one data module that is a language data module including data strings representing language data, wherein each data string is stored in the language data modules and designated by a token, and wherein to display a data string on the remote terminal display, said receiving step receives a token associated with the data string and a command to display the data string from the computer program and based on the token said retrieving step accesses the data modules and retrieves the data string associated with the token, and wherein said providing a command and data step provides the data string and a command to display the data string.

30. A method according to Claim 22, wherein said providing data modules step provides a plurality of language data modules on a computer-readable medium, wherein each language data module includes data strings representing language data in a selected language, and wherein said providing data modules step further provides a main language module header on a computer-readable medium comprising individual pointers indicating the location in a computer-readable storage medium in which each language data module is located, wherein to display a data string in a selected language, said receiving step receives a token associated with the data string and a command to display the data string from the computer program, wherein said retrieving step accesses the main language module header and retrieves the pointer associated with the language data module corresponding to a preselected desired language for displaying the data string, wherein said retrieving step using the pointer, accesses the language data module and retrieves the data string associated with the token, and wherein said providing a command and data step provides the data string for display on the remote display terminal.

31. A method according to Claim 29, wherein said providing step further provides a font module stored on a computer-readable medium containing font data for displaying 256 standard and extended ASCII characters.

32. A method according to Claim 31, wherein said providing data modules step provides at least one data module that is a language data module, wherein said providing data modules step provides:

5 a string data area stored on a computer-readable medium that includes data strings representing language data, wherein each character of each data string is a character selected from the group consisting of standard ASCII, extended ASCII, and double byte characters;

10 an extended ASCII font data area stored on a computer-readable medium for storing font data related to extended ASCII characters that are not displayable using the extended ASCII character font data stored in the font module; and

15 a double byte character font data area stored on a computer-readable medium for storing font data related to characters that are double byte characters.

33. A method according to Claim 32, wherein said providing step provides a string data area wherein characters in a data string that are extended ASCII characters and 15 standard ASCII characters, if any, having ASCII codes less than a selected escape code are stored by their ASCII representations in the string data area, while extended ASCII characters and standard ASCII, if any, having ASCII codes at least as great as the selected escape code and ASCII characters that identify the start of 16 bit double byte characters are encoded into 16 bit values and the encoded values are stored in the string 20 data area.

34. A method according to Claim 32, wherein said providing step provides a string data area wherein characters in a data string that are standard ASCII characters and extended ASCII characters having ASCII codes less than a selected escape code are stored by their ASCII representations in the string data area, while extended ASCII 25 characters having ASCII codes at least as great as the selected escape code and ASCII characters that identify the start of 16 bit double byte characters are encoded into 16 bit values and the encoded values are stored in the string data area.

35. A method according to Claim 34, wherein said providing step provides a string data area including double byte characters that are sequentially encoded and the

encoded values representing the double byte characters are stored in the string data area, wherein font data associated with the double byte characters is stored in the double byte character font data area, and wherein at least one extended ASCII character is encoded as a 16 bit value in the string data area with an escape code preceding the ASCII 5 representation of the extended ASCII character, and wherein if the extended ASCII character is not displayable with the extended ASCII character font data stored in the font module, data for the extended ASCII character is stored in the extended ASCII font data area.

36. A method according to Claim 35, wherein said providing step provides a 10 string data area including double byte characters that are sequentially encoded such that the first double byte character is represented by a two-byte code having a first byte that is one value greater than the escape code and a second byte equal to zero, and wherein remaining unique double byte characters are encoded with sequential 16 bit code values.

37. A method according to Claim 35, wherein to display a data string on a remote 15 display terminal, said receiving step receives the token associated with the data string and a command to display the data string from the computer program and said retrieving step accesses the location in the string data area where the data string is located, and wherein said providing a command and data step sequentially outputs the characters of the data string along with a command to display the data string to the output redirection handler.

20 38. A method according to Claim 31, wherein to display an ASCII character, said retrieving step locates the font data associated with the ASCII character in the font module, and wherein said providing a command and data step, using the font data, outputs the ASCII character to a local display and a command and the character code to display the character to the output redirection handler.

25 39. A method according to Claim 22, wherein said providing data modules step further provides a logo module stored on a computer-readable medium, wherein the logo module contains graphical data for display of at least one logo, wherein when said receiving step receives a command to display the logo, said retrieving step locates the graphical data associated with the logo in the logo module, and wherein said providing a

command and data step, using the logo data, provides the logo image to the local display and a command to display a representation of the logo to the output redirection handler.

40. A method according to Claim 22, wherein said providing a command and data step provides data for displaying a progress bar and a command to display the 5 progress bar representation to the output redirection handler.

41. A method according to Claim 22, wherein said providing a command and data step provides data for displaying a box defining an area on a display terminal and a command to display the box to the output redirection handler.

42. A method according to Claim 41, wherein said providing a command and 10 data step provides data for displaying a box defining an area on a display terminal and data to be displayed within the defined area of the box, and wherein said providing a command and data step provides a command to scroll the data displayed within the defined area, while any data displayed on other portions of the remote display terminal remain at the same position.

15 43. A computer program product for redirecting the display of information from a computer program to a remote display terminal, wherein the computer program product comprises:

means embodied in said medium, said computer-readable program code means comprising:

20 first computer instruction means for providing on a computer-readable medium data modules containing text and graphical data used by the computer program to display text information and a representation of graphical images on the remote display terminal;

25 second computer instruction means for receiving a command to display data from the computer program;

third computer instruction means for retrieving data associated with the command from the data modules;

fourth computer instruction means for providing a command and data from the data modules for display;

fifth computer instruction means for redirecting the command and data to be displayed to the remote display terminal; and

5 sixth computer instruction means for displaying the data on the remote display terminal.

44. A computer program product according to Claim 43, wherein said fourth computer instruction means provides data based on a predetermined set of commands, and wherein said fifth computer instruction means, using the predetermined set of 10 commands, redirects the data for display on the remote display terminal.

45. A computer program product according to Claim 43 further comprising seventh computer instruction means for transmitting the command and data from said fifth computer instruction means on a data communication link to the remote display terminal.

15 46. A computer program product according to Claim 45, wherein the data communication link is a data communication link selected from the group consisting of parallel, serial, and network, and wherein said seventh computer instruction means formats the commands and data from said fifth computer instruction means for transmission across the data communication link.

20 47. A computer program product according to Claim 45, wherein said sixth computer instruction means receives commands and data from said seventh computer instruction means and controls the remote display terminal to display the data from the computer program.

48. A computer program product according to Claim 43 further comprising 25 seventh computer instruction means for storing a current attribute value representing a color attribute of the characters being displayed on the remote display terminal such that subsequent commands to display data on the remote display terminal from said fourth

computer instruction means that do not alter the attribute do not require output of the attribute variable.

49. A computer program product according to Claim 43 further comprising
seventh computer instruction means for storing a value representing the current position
5 of a cursor on the remote display terminal such that subsequent commands to display data
on the remote display terminal do not require data concerning cursor position.

50. A computer program product according to Claim 43, wherein said first
computer instruction means provides at least one data module that is a language data
module including data strings representing language data, wherein each data string is
10 stored in the language data modules and designated by a token, and wherein to display a
data string on the remote terminal display, said second computer instruction means
receives a token associated with the data string along with a command to display the data
string from the computer program and based on the token said third computer instruction
means accesses the data modules and retrieves the data string associated with the token,
15 and wherein said fourth computer instruction means provides the data string and a
command to display the data string.

51. A computer program product according to Claim 43, wherein said first
computer instruction means provides a plurality of language data modules on a computer-
readable medium, wherein each language data module includes data strings representing
20 language data in a selected language, and wherein said first computer instruction means
further provides a main language module header on a computer-readable medium
comprising individual pointers indicating the location in a computer-readable storage
medium in which each language data module is located, wherein to display a data string
in a selected language, said second computer instruction means receives a token
25 associated with the data string along with a command to display the data string from the
computer program, wherein said third computer instruction means accesses the main
language module header and retrieves the pointer associated with the language data
module corresponding to a preselected desired language for displaying the data string,
wherein said third computer instruction means, using the pointer, accesses the language

data module and retrieves the data string associated with the token, and wherein said fourth computer instruction means provides the data string for display on the remote display terminal.

52. A computer program product according to Claim 42, wherein said first
5 computer instruction means provides a font module stored on a computer-readable medium containing font data for displaying 256 standard and extended ASCII characters.

53. A computer program product according to Claim 52, wherein said first computer instruction means provides at least one data module that is a language data module, wherein said first computer instruction means provides:

10 a string data area stored on a computer-readable medium that includes data strings representing language data, wherein each character of each data string is a character selected from the group consisting of standard ASCII, extended ASCII, and double byte characters;

15 an extended ASCII font data area stored on a computer-readable medium for storing font data related to extended ASCII characters that are not displayable using the extended ASCII character font data stored in the font module; and

a double byte character font data area stored on a computer-readable medium for storing font data related to characters that are double byte characters.

54. A computer program product according to Claim 53, wherein said first
20 computer instruction means provides a string data area wherein characters in a data string that are extended ASCII characters and standard ASCII characters, if any, having ASCII codes less than a selected escape code are stored by their ASCII representations in the string data area, while extended ASCII characters and standard ASCII, if any, having ASCII codes at least as great as the selected escape code and ASCII characters that
25 identify the start of 16 bit double byte characters are encoded into 16 bit values and the encoded values are stored in the string data area.

55. A computer program product according to Claim 53, wherein said first computer instruction means provides a string data area wherein characters in a data string that are standard ASCII characters and extended ASCII characters having ASCII codes

less than a selected escape code are stored by their ASCII representations in the string data area, while extended ASCII characters having ASCII codes at least as great as the selected escape code and ASCII characters that identify the start of 16 bit double byte characters are encoded into 16 bit values and the encoded values are stored in the string 5 data area.

56. A computer program product according to Claim 52, wherein said first computer instruction means provides a string data area including double byte characters that are sequentially encoded and the encoded values representing the double byte characters are stored in the string data area, wherein font data associated with the double 10 byte characters is stored in the double byte character font data area, and wherein at least one extended ASCII character is encoded as a 16 bit value in the string data area with an escape code preceding the ASCII representation of the extended ASCII character, and wherein if the extended ASCII character is not displayable with the extended ASCII character font data stored in the font module, data for the extended ASCII character is 15 stored in the extended ASCII font data area.

57. A computer program product according to Claim 56, wherein said first computer instruction means provides a string data area including double byte characters that are sequentially encoded such that the first double byte character is represented by a two-byte code having a first byte that is one value greater than the escape code and a 20 second byte equal to zero, and wherein remaining unique double byte characters are encoded with sequential 16 bit code values.

58. A computer program product according to Claim 56, wherein to display a data string on a remote display terminal, said second computer instruction means receives the token associated with the data string and a command to display the data string from 25 the computer program and said third computer instruction means accesses the location in the string data area where the data string is located, and wherein said fourth computer instruction means sequentially outputs the characters of the data string along with a command to display the data string.

59. A computer program product according to Claim 52, wherein to display an ASCII character, said third computer instruction means locates the font data associated with the ASCII character in the font module, and wherein said fourth computer instruction means, using the font data, outputs the ASCII character to a local display and 5 a command and the character code to the output redirection handler.

60. A computer program product according to Claim 43, wherein said first computer instruction means further provides a logo module stored on a computer-readable medium, wherein the logo module contains graphical data for display of at least one logo, wherein when said second computer instruction means receives a command to 10 display the logo, said third computer instruction means locates the graphical data associated with the logo in the logo module, and wherein said fourth computer instruction means, using the logo data, outputs the logo image to the local display and a command and data necessary to display a representation of the logo to the output redirection handler.

15 61. A computer program product according to Claim 43, wherein said fourth computer instruction means provides data for displaying a progress bar and a command to display the progress bar representation.

20 62. A computer program product according to Claim 43, wherein said fourth computer instruction means provides data for displaying a box defining an area on a display terminal and a command to display the box.

25 63. A computer program product according to Claim 62, wherein said fourth computer instruction means provides data for displaying a box defining an area on a display terminal and data to be displayed within the defined area of the box, and wherein said fourth computer instruction means provides a command to scroll the data displayed within the defined area, while any data displayed on other portions of the remote display terminal remain at the same position.